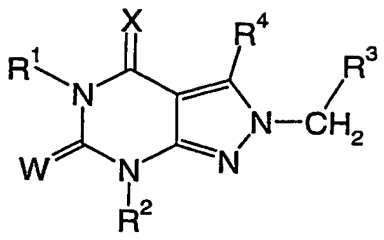
Claims:

1. A compound having the structural formula (I):



(I)

wherein,

X is S, O, or NR^{20}, provided that when W is O, then X is not O,

X and the double bond to which it is attached can be replaced with 2 hydrogen atoms,

W is S, O, or NR^{20}; provided that when X is O, then W is not O;

R^1 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, hydroxy, amino, or optionally substituted heterocycle;

R^2 is H, optionally substituted alkyl, optionally substituted alkylcycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, or optionally substituted heterocycle;

R^3 is a monocyclic or bicyclic, saturated or unsaturated, ring system comprising 0, 1, 2 or 3 heteroatoms independently selected from N, O, or S, the ring being substituted by 0, 1, 2 or 3 substituents selected from =O, halogen, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, nitro, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $N=NR^a$, aminocarbonyl, phenyl, benzyl; or R^3 is represented by -Het, -Het-Het, R^5,$-R^5$-Het, -Het-R^5, -Het-O-R^5, $-R^5-R^5$, $-R^5-OR^5$;

R^4 is a monocyclic or bicyclic, saturated or unsaturated, ring system, or a vicinal-fused derivative thereof, which may contain from 5 to 12, preferably 5 to 10, ring atoms, 0, 1, 2, 3

or 4 of which are heteroatoms independently selected from N, O, or S, the ring system being substituted by 0, 1, 2 or 3 substituents selected from $B(OH)_2$, vicinal $-OCH_2CH_2O-$, vicinal $-OC_{1-2}$haloalkylO-, vicinal $-OCH_2O-$, vicinal $-CH_2OCH_2O-$, =O, halogen, $-R^bOR^a$, $-SR^a$, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $-NHC(=O)OR^a$, $N=NR^a$, NO_2, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_nR^a)$, $-C(=O)NR^a(R^bHet)$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, $-S(=O)_2NR^a(R^bC(=O)OR^a)$, aminocarbonyl, phenyl, benzyl; or R^4 is represented by $-(CH_2)_nR^5$-Het, $-(CH_2)_nR^d$, -Het, -Het-Het, R^5, $-R^5$-Het, -Het-R^5, -Het-OR^5, R^5-R^5, or $-R^5$-OR^5; or R^4 is represented by C_{1-6}alky, $-NC_{1-6}$alkyl, or $-N(C_{1-6}alkyl)_2$ wherein the C_{1-6}alkyl, $-NC_{1-6}$alkyl, $-N(C_{1-6}$alkyl) are substituted by 0, 1 or 2 substituents selected from R^a, OR^a, halogen or phenyl wherein R^4 is not $-(CH_2)_zCH_3$, $-(CH_2)_zCH_2OH$, $-(CH_2)_zCO_2H$, or $-(CH_2)_zCO_2C_{1-6}$alkyl wherein z is 1,2,3,4,5, or 6;

R^5 is independently at each instance, phenyl substituted by 0, 1, 2, or 3 groups selected from halogen, C_{1-6}haloalkyl, $-OC_{1-6}$haloalkyl, C_{1-6}alkyl, -CN, nitro, $-OR^a$, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-R^bOR^a$, $-SR^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^aR^bNR^aR^a$, $-C(=O)NR^aR^bOR^a$, $-C(=O)NR^aR^bS(=O)_nR^a$, $-C(=O)NR^aR^bHet$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^aR^bC(=O)NR^aR^a$, or $-S(=O)_2NR^aR^bC(=O)OR^a$;

R^{20} is, independently at each instance, H, -CN, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

R^a is, independently at each instance, H, C_{1-6}alkyl, $-C(=O)C_{1-4}$alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^b is, independently at each instance, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^c is C_{1-6}alkyl, C_{1-4}haloalkyl, phenyl or benzyl;

R^d is phenyl substituted by 0, 1 or 2 groups selected from -CN, halogen, nitro, C_{1-6}alkyl, C_{1-4}haloalkyl, -OH, -OR^c, -NR^aR^a, -$S(=O)_nR^c$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, -$OC(=O)R^a$, $B(OH)_2$, vicinyl -OCH_2CH_2O-, vicinyl -OC_{1-2}haloalkylO-, vicinyl -OCH_2O-, vicinyl -CH_2OCH_2O-, phenyl, benzyl and a 5- or 6-membered ring, saturated or unsaturated heterocycle containing 1, 2, 3 or 4 heteroatoms independently selected from N, O, or S;

m is 1, 2 or 3;

n is 0, 1 or 2;

When "optionally substituted" is used, it refers to at least one substituent selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, NH(C_{1-4} alkyl), N(C_{1-4} alkyl)$_2$, C_{1-4} alkanoylamino, (C_{1-4} alkanoyl)$_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl)$_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S(O)$_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic

or a pharmaceutically acceptable salt thereof.

2. A compound as recited in Claim 1 wherein:

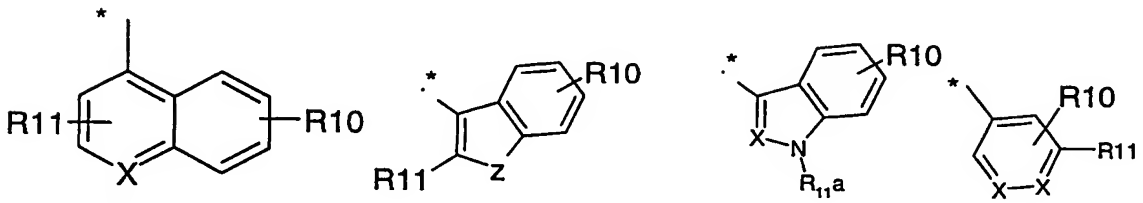
R^1 is H, or C_{1-6}alkyl, or –$(CH_2)_n$cycloalkyl or –$(CH_2)_{1-2}$Het wherein C_{1-6}alkyl or –$(CH_2)_n$cycloalkyl or –$(CH_2)_{1-2}$Het is optionally substituted by 1, 2 or 3 substituents selected from Het, halogen, -CN, -OR^a, -NR^aR^a, -$C(=O)OR^a$, -$C(=O)NR^aR^a$, -$OC(=O)C_{1-4}$alkyl, -$S(=O)_nR^c$, -$S(=O)_nNR^aR^a$ or -$NR^aC(=O)C_{1-4}$alkyl and n is 0, 1 or 2.

3. A compound as recited in Claim 1 wherein:

R^2 is –$(CH_2)_{1-3}$cycloalkyl or -C_{1-12}alkyl wherein –$(CH_2)_{1-3}$cycloalkyl or -C_{1-12}alkyl is optionally substituted with 0, 1, 2 or 3 substituents selected from Het, $S(=O)_nR^c$, -$S(=O)_nNR^aR^a$ halogen, -CN, -OR^a, -NR^aR^a, -$C(=O)OR^a$, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$OC(=O)C_{1-4}$alkyl, or -$NR^aC(=O)C_{1-4}$alkyl and n is 0, 1 or 2.

4. A compound as recited in Claim 1 wherein:

R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:

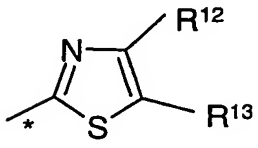


(i) (ii) (iii) (iv)

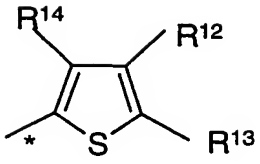
wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

5. A compound as recited in Claim 1 wherein:

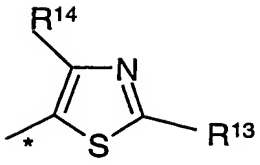
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



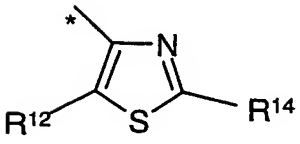
(a)



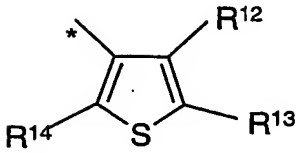
(b)



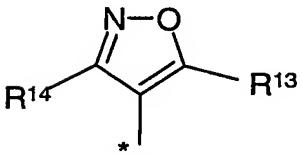
(c)



(d)



(e)



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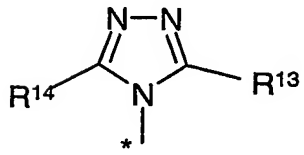
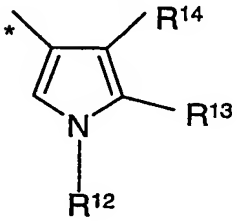
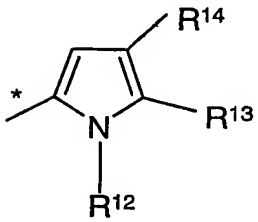


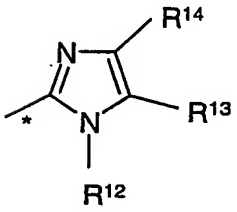
(g)



(h)



(i)



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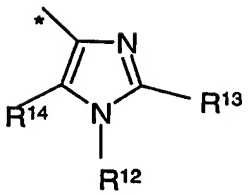

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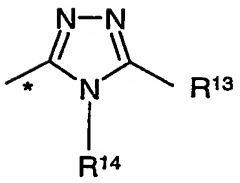
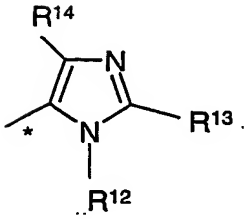
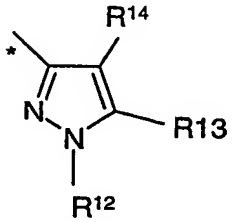


(l)



(m)



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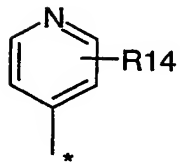
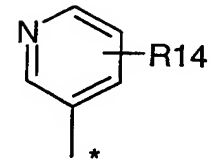


(o)



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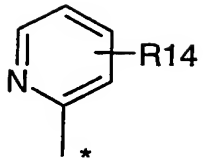
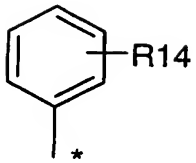


(q)



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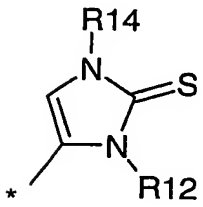

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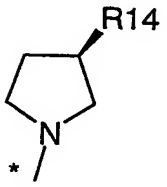
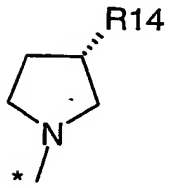
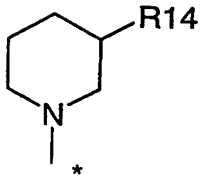


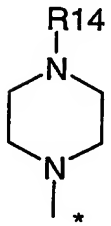
(t)



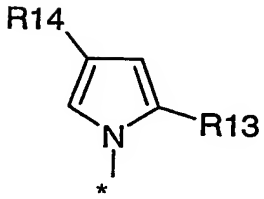
(u)



(v)



(w)



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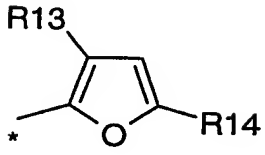

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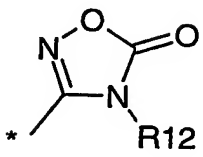
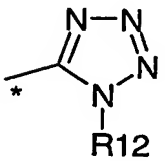


(z)



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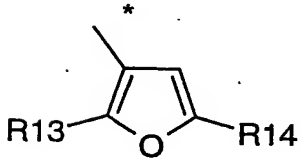


(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aS(=O)_2R^a$, $-C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^bHet$, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

6. A compound as recited in Claim 1 wherein:

X is S, O, or NR^{20}, provided that when W is O, then X is not O; or X and the double bond to which it is attached can be 2 hydrogen atoms,

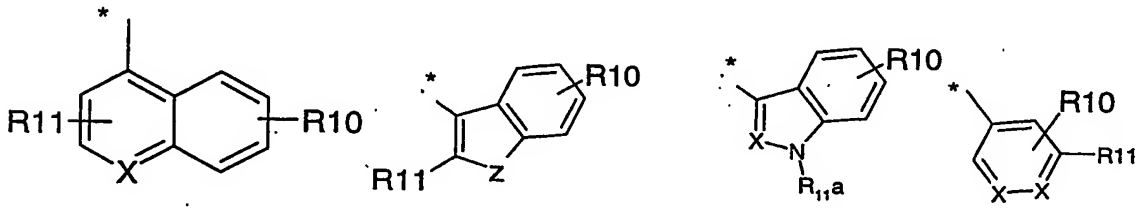
W is S, O, or NR^{20}; provided that when X is O, then W is not O;

R^{20} is H, -CN, R^a, $-OR^a$, $-NR^aR^a$, -Het, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$

R^1 is CH_3, CH_2CH_3, CH_2CN, CF_3, $(CH_2)_2OH$, cyclopropyl, isopropyl, CH_2CCH, $(CH_2)_2N(CH_2)_2$, $(CH_2)_2N(C=NH)NH_2$, $-CH_2$-2-pyridyl, $-CH_2$-3-pyridyl, $-CH_2$-4-pyridyl, $-(CH_2)_2$-1-imidazolyl, $-(CH_2)_2$-1-pyrazolyl, $-(CH_2)_2$-1-piperidyl, $-(CH_2)_m$-(1-methylpiperidin-4-yl), $-CH_2$-(1-methylpiperidin-3-yl), $-(CH_2)_2$-(morpholin-4-yl),

R^2 is $-CH_2CH_2CH_3$, $-CH_2$-cyclopropyl, $-CH_2CH(CH_3)_2$, $-CH_2CH_2CH_2F$, $-CH_2$-cyclobutyl, $-CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)_2$, $-CH_2CF_3$, $-CH_2$-methylphenyl, $-CH_2$-phenol, $-CH_2$-(3,5-dimethylisoxazol-4-yl), $-CH_2$-S-phenyl, $-CH_2$-phenylcarboxyl, or $-CH_2SCF_3$;

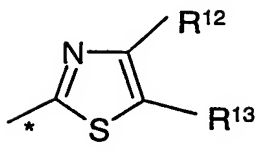
R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:



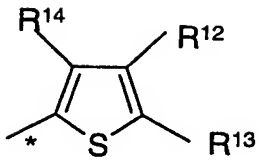
(i) (ii) (iii) (iv)

wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

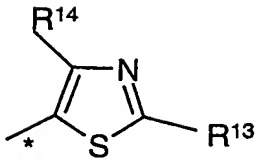
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



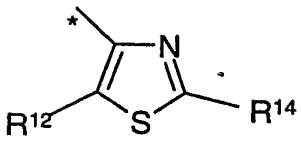
(a)



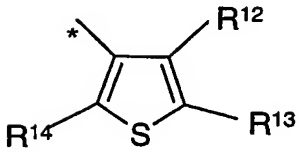
(b)



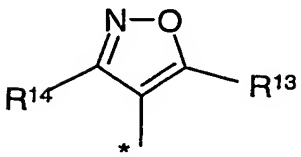
(c)



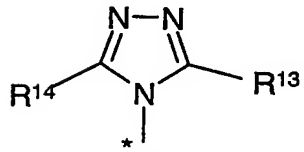
(d)



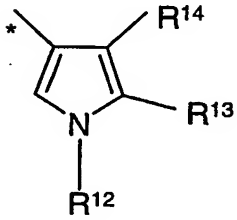
(e)



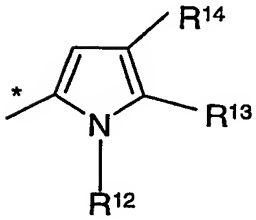
(f)



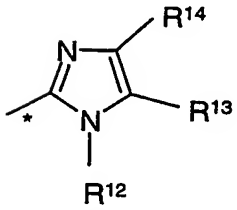
(g)



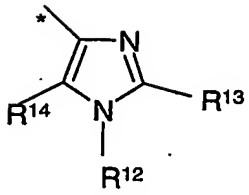
(h)



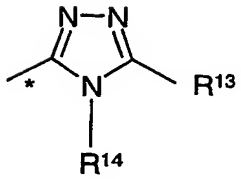
(i)



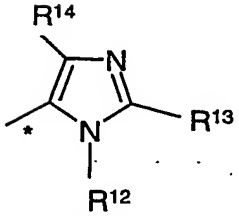
(j)



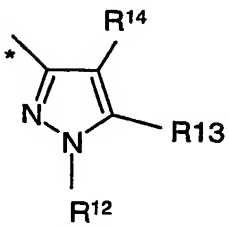
(k)



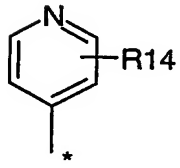
(l)



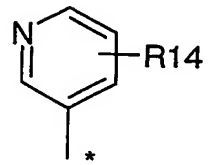
(m)



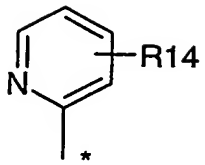
(n)



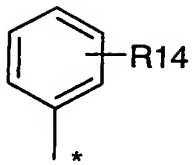
(o)



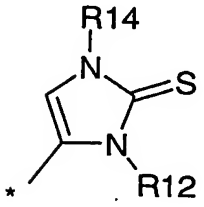
(p)



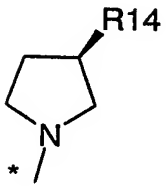
(q)



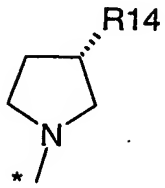
(r)



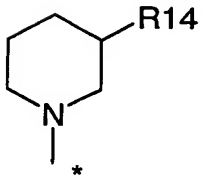
(s)



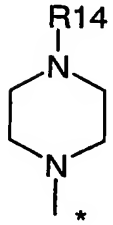
(t)



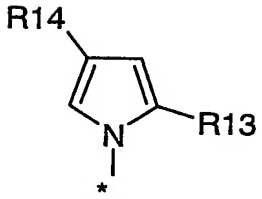
(u)



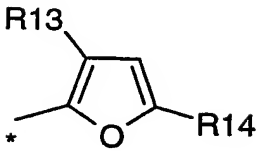
(v)



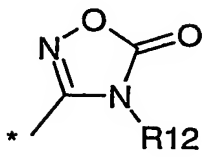
(w)



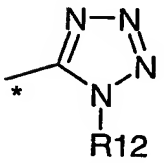
(x)



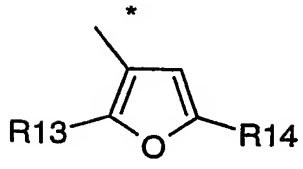
(y)



(z)



(aa)



(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)NR^aS(=O)_2R^a$, -$C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^bHet$, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

7. A compound of formula (I) selected from:

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-oxo-4-thioxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-imino-5-methyl-6-oxo-4,5,6,7-tetrahydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[(4*Z*)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-4-(methylimino)-6-oxo-4,5,6,7-tetrahydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-imino-5-methyl-4-oxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-4-oxo-6-thioxo-4,5,6,7-tetrahydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[(6Z)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-6-(methylimino)-4-oxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

N-[(6Z)-2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-7-(cyclopropylmethyl)-5-methyl-4-oxo-2,4,5,7-tetrahydro-6H-pyrazolo[3,4-d]pyrimidin-6-ylidene]acetamide;

N-[(6Z)-2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-7-(cyclopropylmethyl)-5-methyl-4-oxo-2,4,5,7-tetrahydro-6H-pyrazolo[3,4-d]pyrimidin-6-ylidene]methanesulfonamide;

5-((6Z)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-{[2-(dimethylamino)ethyl]imino}-5-methyl-4-oxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl)-1-methyl-1H-pyrrole-3-carbonitrile;

N~1~-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-7-(cyclopropylmethyl)-5-methyl-4-oxo-2,4,5,7-tetrahydro-6H-pyrazolo[3,4-d]pyrimidin-6-ylidene]-N~2~,N~2~-dimethylglycinamide;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-oxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

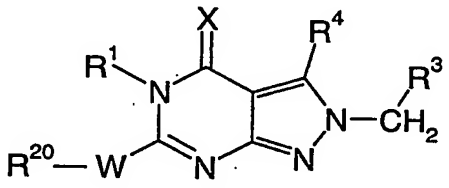
5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-6-oxo-4,5,6,7-tetrahydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-3-(1-methyl-1*H*-imidazol-5-yl)-4-thioxo-2,4,5,7-tetrahydro-6*H*-pyrazolo[3,4-*d*]pyrimidin-6-one;

(4*Z*)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-3-(1-methyl-1*H*-imidazol-5-yl)-4-(methylimino)-2,4,5,7-tetrahydro-6*H*-pyrazolo[3,4-*d*]pyrimidin-6-one.

8. A compound having the structural formula (II):



(II)

wherein,

X is S, O, or NR^{20},

X and the double bond to which it is attached can be replaced with 2 hydrogen atoms,

W is S, O, or NR^{21};

R^1 is H, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, hydroxy, amino, or optionally substituted heterocycle, wherein the substitution is selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, $NH(C_{1-4}$ alkyl), $N(C_{1-4}$ alkyl)$_2$, C_{1-4} alkanoylamino, (C_{1-4} alkanoyl)$_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl)$_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S(O)$_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic;

R^3 is a monocyclic or bicyclic, saturated or unsaturated, ring system comprising 0, 1, 2 or 3 heteroatoms independently selected from N, O, or S, the ring being substituted by 0, 1, 2 or 3 substituents selected from =O, halogen, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, nitro, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $N=NR^a$, aminocarbonyl, phenyl, benzyl; or R^3 is represented by -Het, -Het-Het, R^5,$-R^5$-Het, -Het-R^5, -Het-O-R^5, $-R^5$-R^5, $-R^5$-OR^5;

R^4 is a monocyclic or bicyclic, saturated or unsaturated, ring system, or a vicinal-fused derivative thereof, which may contain from 5 to 12, preferably 5 to 10, ring atoms, 0, 1, 2, 3 or 4 of which are heteroatoms independently selected from N, O, or S, the ring system being substituted by 0, 1, 2 or 3 substituents selected from $B(OH)_2$, vicinal $-OCH_2CH_2O-$, vicinal -OC_{1-2}haloalkylO-, vicinal $-OCH_2O-$, vicinal $-CH_2OCH_2O-$, =O, halogen, $-R^bOR^a$, $-SR^a$, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $-NHC(=O)OR^a$, $N=NR^a$, NO_2, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_nR^a)$, $-C(=O)NR^a(R^bHet)$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, $-S(=O)_2NR^a(R^bC(=O)OR^a)$, aminocarbonyl, phenyl, benzyl; or R^4 is represented by $-(CH_2)_nR^5$-Het, $-(CH_2)_nR^d$, -Het, -Het-Het, R^5, $-R^5$-Het, -Het-R^5, -Het-OR^5, R^5-R^5, or $-R^5$-OR^5; or R^4 is represented by C_{1-6}alky, $-NC_{1-6}$alkyl, or $-N(C_{1-6}alkyl)_2$ wherein the C_{1-6}alkyl, $-NC_{1-6}$alkyl, $-N(C_{1-6}$alkyl) are substituted by 0, 1 or 2 substituents selected from R^a, OR^a, halogen or phenyl wherein R^4 is not $-(CH_2)_zCH_3$, $-(CH_2)_zCH_2OH$, $-(CH_2)_zCO_2H$, or $-(CH_2)_zCO_2C_{1-6}$alkyl wherein z is 1,2,3,4,5, or 6;

R^5 is independently at each instance, phenyl substituted by 0, 1, 2, or 3 groups selected from halogen, C_{1-6}haloalkyl, -OC_{1-6}haloalkyl, C_{1-6}alkyl, -CN, nitro, $-OR^a$, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-R^bOR^a$, $-SR^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^aR^bNR^aR^a$, $-C(=O)NR^aR^bOR^a$, $-C(=O)NR^aR^bS(=O)_nR^a$, -

$C(=O)NR^aR^bHet$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^aR^bC(=O)NR^aR^a$, or $-S(=O)_2NR^aR^bC(=O)OR^a$;

R^{20} is, independently at each instance, H, -CN, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, wherein the substitution is selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, $NH(C_{1-4}$ alkyl), $N(C_{1-4}$ alkyl$)_2$, C_{1-4} alkanoylamino, $(C_{1-4}$ alkanoyl$)_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl$)_2$carbamoyl, $(C_{1-4})S$, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)$S(O)_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic;

R^{21} is, independently at each instance, H, -CN, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$; optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, wherein the substitution is selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, $NH(C_{1-4}$ alkyl), $N(C_{1-4}$ alkyl$)_2$, C_{1-4} alkanoylamino, $(C_{1-4}$ alkanoyl$)_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl$)_2$carbamoyl, $(C_{1-4})S$, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)$S(O)_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic;

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^a is, independently at each instance, H, C_{1-6}alkyl, $-C(=O)C_{1-4}$alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^b is, independently at each instance, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^c is C_{1-6}alkyl, C_{1-4}haloalkyl, phenyl or benzyl;

R^d is phenyl substituted by 0, 1 or 2 groups selected from -CN, halogen, nitro, C_{1-6}alkyl, C_{1-4}haloalkyl, -OH, -OR^c, -NR^aR^a, -$S(=O)_nR^c$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, -$OC(=O)R^a$, $B(OH)_2$, vicinyl -OCH_2CH_2O-, vicinyl -OC_{1-2}haloalkylO-, vicinyl -OCH_2O-, vicinyl -CH_2OCH_2O-, phenyl, benzyl and a 5- or 6-membered ring, saturated or unsaturated heterocycle containing 1, 2, 3 or 4 heteroatoms independently selected from N, O, or S;

R^e is independently at each instance, H, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

m is 1, 2 or 3;

n is 0, 1 or 2;

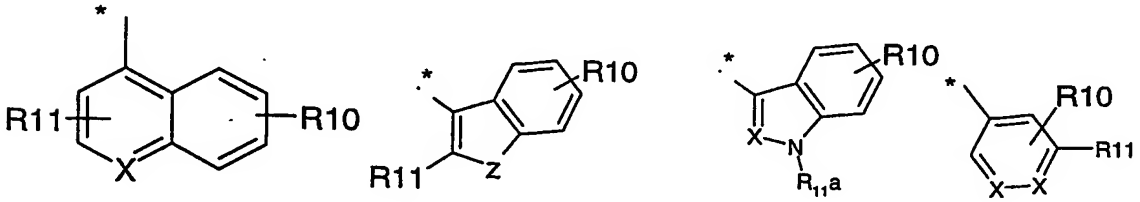
or a pharmaceutically acceptable salt thereof.

9. A compound as recited in Claim 8 wherein:

R^1 is H, or C_{1-6}alkyl, or –$(CH_2)_n$cycloalkyl wherein C_{1-6}alkyl or –$(CH_2)_n$cycloalkyl is optionally substituted by 1, 2 or 3 substituents selected from Het, halogen, -CN, -OR^a, -NR^aR^a, -$C(=O)OR^a$, -$C(=O)NR^aR^a$, -$OC(=O)C_{1-4}$alkyl or -$NR^aC(=O)C_{1-4}$alkyl and n is 0, 1 or 2.

10. A compound as recited in Claim 8 wherein:

R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:

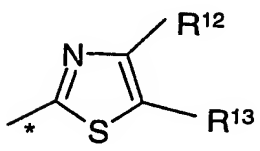


(i) (ii) (iii) (iv)

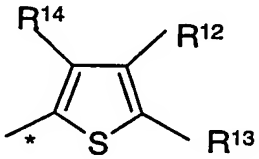
wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

11. A compound as recited in Claim 8 wherein:

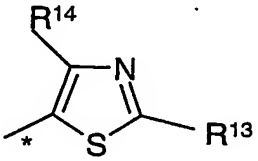
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



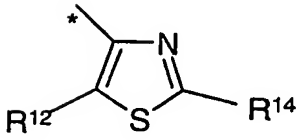
(a)



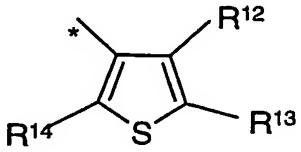
(b)



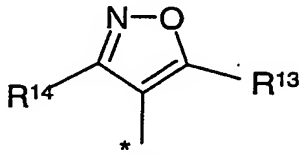
(c)



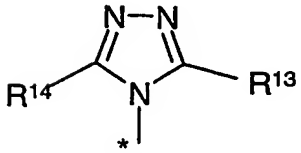
(d)



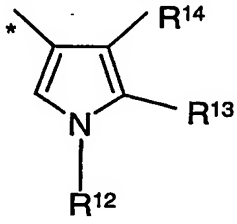
(e)



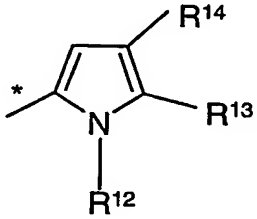
(f)



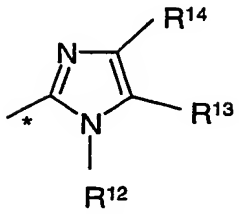
(g)



(h)



(i)



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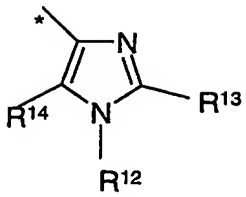
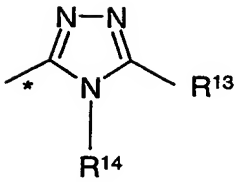


(k)



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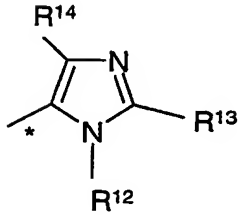
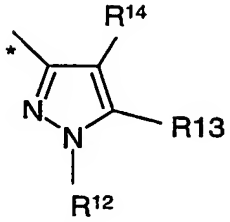


(m)



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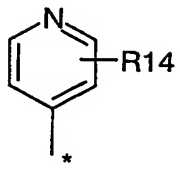
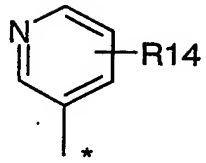


(o)



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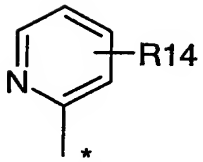

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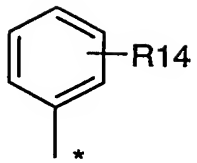

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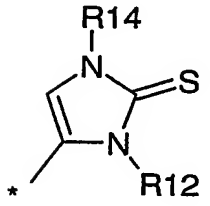

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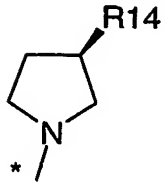

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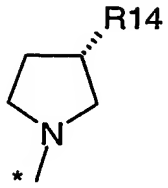

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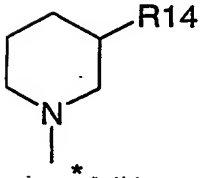

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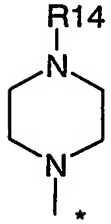

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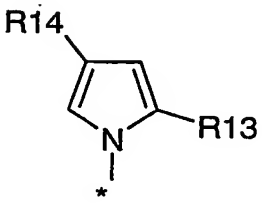
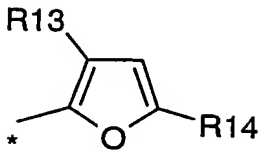
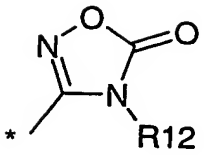


(x)

5



(y)



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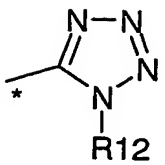

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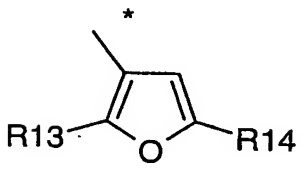


(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)NR^aS(=O)_2R^a$, -$C(=O)NR^a$-Het, -$C(=O)NR^aNR^aR^a$, -$C(=O)NR^a(R^bNR^aR^a)$, -$C(=O)NR^a(R^bOR^a)$, -$C(=O)NR^a(R^bS(=O)_2R^a)$, -$C(=O)NR^aR^b$Het, -$C(=O)NR^aOR^a$, -$C(=O)R^bNR^aR^a$, -$C(=NOR^a)R^a$, -$C(=NCN)R^a$, -$C(=O)OR^a$, -$C(=O)OR^bNR^aR^a$, -$C(=O)R^a$, –$OC(=O)R^a$, -$C(=O)R^a$-SR^a, =S, -$NR^aC(=O)R^a$, -$NR^aC(=O)OR^a$, -$NR^aS(=O)_2R^b$, -$C(=NOR^a)R^a$, -$S(=O)_2R^a$, -$S(=O)_2NR^aR^a$, -$S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or -$S(=O)_2NR^a(R^bC(=O)OR^a$.

12. A compound as recited in Claim 8 wherein:

X is S, O, or NR^{20};or X and the double bond to which it is attached can be 2 hydrogen atoms,

W is S, O, or NR^{21};

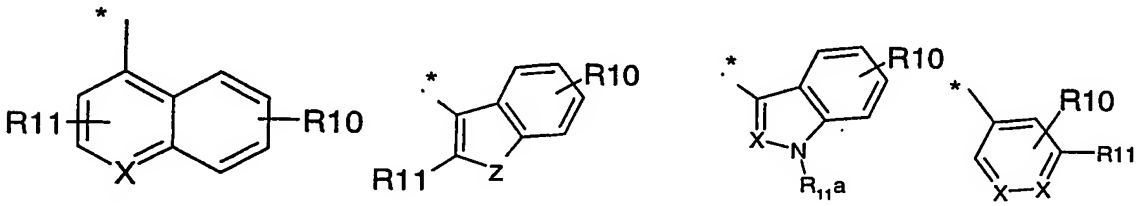
R^{20} is H, -CN, R^a, -OR^a, -NR^aR^a, -Het, -$S(=O)_nR^c$, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, or -$OC(=O)R^a$;

R^{20} is H, -CN, R^a, -OR^a, -NR^aR^a, -Het, -$S(=O)_nR^c$, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, or -$OC(=O)R^a$;

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^1 is CH_3, CH_2CH_3, CH_2CN, CF_3, $(CH_2)_2OH$, cyclopropyl, isopropyl, CH_2CCH, $(CH_2)_2N(CH_2)_2$, $(CH_2)_2N(C{=}NH)NH_2$, $-CH_2$-2-pyridyl, $-CH_2$-3-pyridyl, $-CH_2$-4-pyridyl, $-(CH_2)_2$-1-imidazolyl, $-(CH_2)_2$-1-pyrazolyl, $-(CH_2)_2$-1-piperidyl, $-(CH_2)_m$-(1-methylpiperidin-4-yl), $-CH_2$-(1-methylpiperidin-3-yl), $-(CH_2)_2$-(morpholin-4-yl),

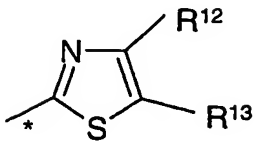
R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:



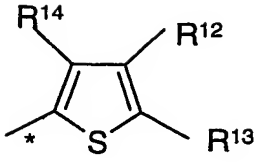
(i) (ii) (iii) (iv)

wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

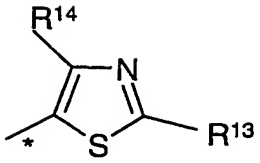
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



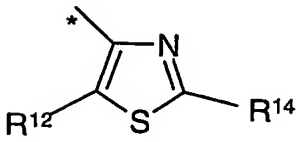
(a)



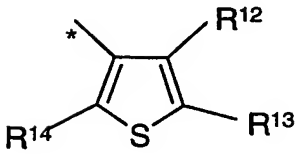
(b)



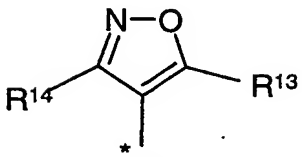
(c)



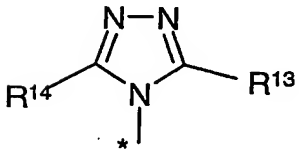
(d)



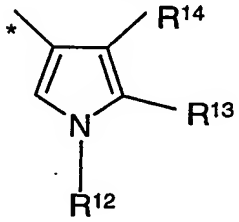
(e)



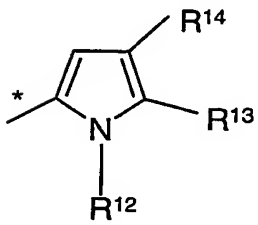
(f)



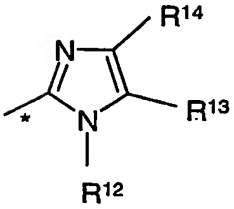
(g)



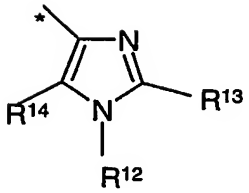
(h)



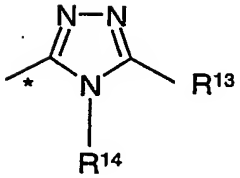
(i)



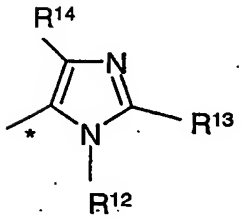
(j)



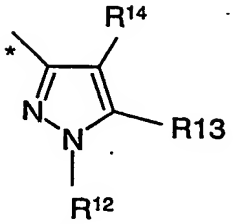
(k)



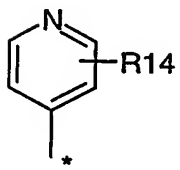
(l)



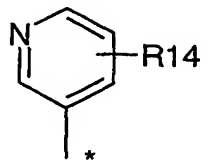
(m)



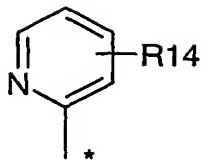
(n)



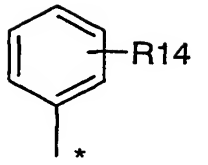
(o)



(p)



(q)



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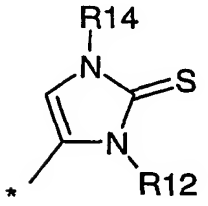
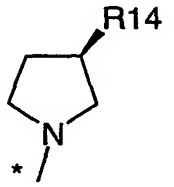
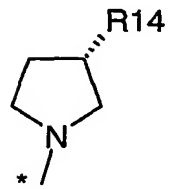


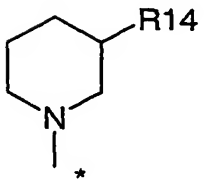
(s)



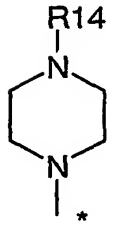
(t)



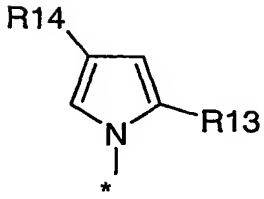
(u)



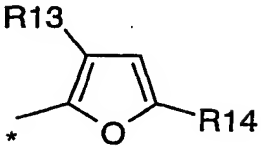
(v)



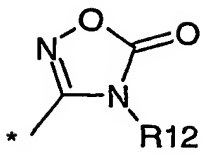
(w)



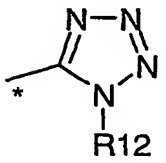
(x)



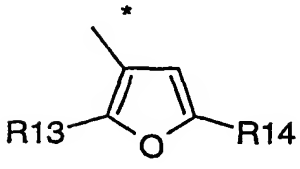
(y)



(z)



(aa)



(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aS(=O)_2R^a$, $-C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^b$Het, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

13. A compound of formula (II) selected from:

5-{6-amino-2-[(6-chloroquinolin-4-yl)methyl]-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

N-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-yl]-3-methylbutanamide

N,N-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-yl]-3-methylbutanamide;

N'-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-yl]-N,N-dimethylimidoformamide;

5-{2-[(6-chloroquinolin-4-yl)methyl]-6-[(cyclopropylmethyl)(methyl)amino]-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

5-{2-[(6-chloroquinolin-4-yl)methyl]-6-[(cyclopropylmethyl)amino]-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

N-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-yl]propane-1-sulfonamide;

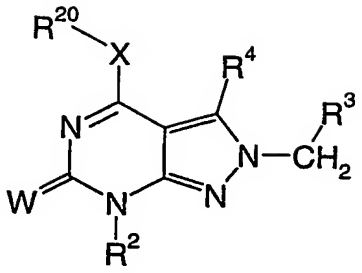
ethyl 2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-ylcarbamate;

N-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-5-methyl-4-oxo-4,5-dihydro-2H-pyrazolo[3,4-d]pyrimidin-6-yl]-N'-ethylurea;

5-[(4*Z*)-2-[(6-chloroquinolin-4-yl)methyl]-6-[(cyclopropylmethyl)amino]-5-methyl-4-(methylimino)-4,5-dihydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[(4*Z*,6*Z*)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-5-methyl-4,6-bis(methylimino)-4,5,6,7-tetrahydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile.

14. A compound having the structural formula (III):



(III)

wherein,

X is S, O, NR^{21}; or XR^{20} is hydrogen;

W is S, O, or NR^{20};

R^2 is H, optionally substituted alkyl, optionally substituted alkylcycloalkyl, optionally substituted alkylcycloalkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, or optionally substituted heterocycle;

R^3 is a monocyclic or bicyclic, saturated or unsaturated, ring system comprising 0, 1, 2 or 3 heteroatoms independently selected from N, O, or S, the ring being substituted by 0, 1, 2 or 3 substituents selected from =O, halogen, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, nitro, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $N=NR^a$, aminocarbonyl, phenyl, benzyl; or R^3 is represented by -Het, -Het-Het, R^5,$-R^5$-Het, -Het-R^5, -Het-O-R^5, $-R^5$-R^5, $-R^5$-OR^5;

R^4 is a monocyclic or bicyclic, saturated or unsaturated, ring system, or a vicinal-fused derivative thereof, which may contain from 5 to 12, preferably 5 to 10, ring atoms, 0, 1, 2, 3 or 4 of which are heteroatoms independently selected from N, O, or S, the ring system being substituted by 0, 1, 2 or 3 substituents selected from $B(OH)_2$, vicinal $-OCH_2CH_2O-$, vicinal -OC_{1-2}haloalkylO-, vicinal $-OCH_2O-$, vicinal $-CH_2OCH_2O-$, =O, halogen, $-R^bOR^a$, $-SR^a$, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, -

$S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $-NHC(=O)OR^a$, $N=NR^a$, NO_2, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_nR^a)$, $-C(=O)NR^a(R^bHet)$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, $-S(=O)_2NR^a(R^bC(=O)OR^a)$, aminocarbonyl, phenyl, benzyl; or R^4 is represented by $-(CH_2)_nR^5$-Het, $-(CH_2)_nR^d$, -Het, -Het-Het, R^5, $-R^5$-Het, -Het-R^5, -Het-OR^5, R^5-R^5, or $-R^5$-OR^5; or R^4 is represented by C_{1-6}alky, $-NC_{1-6}$alkyl, or $-N(C_{1-6}alkyl)_2$ wherein the C_{1-6}alkyl, $-NC_{1-6}$alkyl, $-N(C_{1-6}$alkyl) are substituted by 0, 1 or 2 substituents selected from R^a, OR^a, halogen or phenyl wherein R^4 is not $-(CH_2)_zCH_3$, $-(CH_2)_zCH_2OH$, $-(CH_2)_zCO_2H$, or $-(CH_2)_zCO_2C_{1-6}$alkyl wherein z is 1,2,3,4,5, or 6;

R^5 is independently at each instance, phenyl substituted by 0, 1, 2, or 3 groups selected from halogen, C_{1-6}haloalkyl, $-OC_{1-6}$haloalkyl, C_{1-6}alkyl, -CN, nitro, $-OR^a$, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-R^bOR^a$, $-SR^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^aR^bNR^aR^a$, $-C(=O)NR^aR^bOR^a$, $-C(=O)NR^aR^bS(=O)_nR^a$, $-C(=O)NR^aR^bHet$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^aR^bC(=O)NR^aR^a$, or $-S(=O)_2NR^aR^bC(=O)OR^a$;

R^{20} is, independently at each instance, H, -CN, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

R^{21} is, independently at each instance, H, -CN, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$; or

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^a is, independently at each instance, H, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^b is, independently at each instance, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^c is C_{1-6}alkyl, C_{1-4}haloalkyl, phenyl or benzyl;

R^d is phenyl substituted by 0, 1 or 2 groups selected from -CN, halogen, nitro, C_{1-6}alkyl, C_{1-4}haloalkyl, -OH, -OR^c, -NR^aR^a, -$S(=O)_nR^c$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, -$OC(=O)R^a$, $B(OH)_2$, vicinyl -OCH_2CH_2O-, vicinyl -OC_{1-2}haloalkylO-, vicinyl -OCH_2O-, vicinyl -CH_2OCH_2O-, phenyl, benzyl and a 5- or 6-membered ring, saturated or unsaturated heterocycle containing 1, 2, 3 or 4 heteroatoms independently selected from N, O, or S;

R^e is independently at each instance, H, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

m is 1, 2 or 3;

n is 0, 1 or 2;

When "optionally substituted" is used, it refers to at least one substituent selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, NH(C_{1-4} alkyl), N(C_{1-4} alkyl)$_2$, C_{1-4} alkanoylamino, (C_{1-4} alkanoyl)$_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl)$_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S(O)$_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic

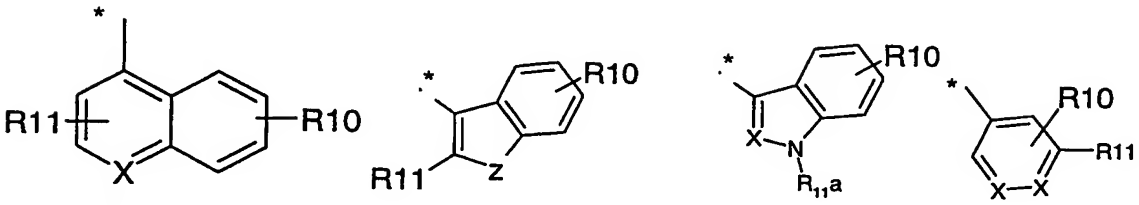
or a pharmaceutically acceptable salt thereof.

15. A compound as recited in Claim 14 wherein:

R^2 is –$(CH_2)_{1-3}$cycloalkyl or -C_{1-12}alkyl wherein –$(CH_2)_{1-3}$cycloalkyl or -C_{1-12}alkyl is optionally substituted with 0, 1, 2 or 3 substituents selected from Het, $S(=O)_nR^c$, halogen, -CN, -OR^a, -NR^aR^a, -$C(=O)OR^a$, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$OC(=O)C_{1-4}$alkyl or -$NR^aC(=O)C_{1-4}$alkyl and n is 0, 1 or 2.

16. A compound as recited in Claim 14 wherein:

R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:

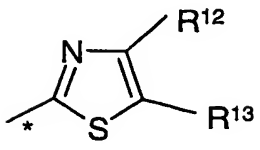


(i) (ii) (iii) (iv)

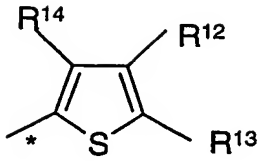
wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

17. A compound as recited in Claim 14 wherein:

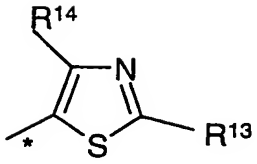
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



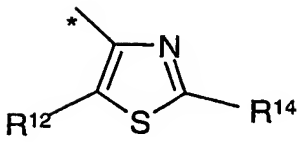
(a)



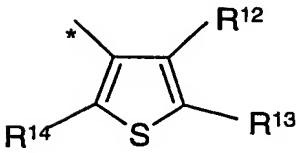
(b)



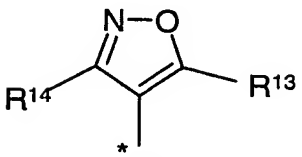
(c)



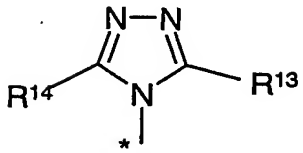
(d)



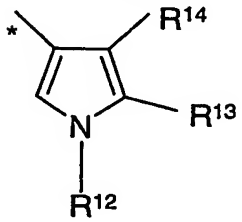
(e)



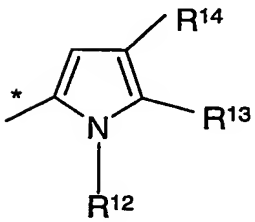
(f)



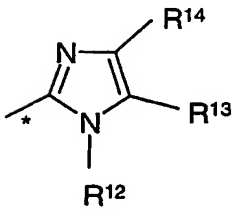
(g)



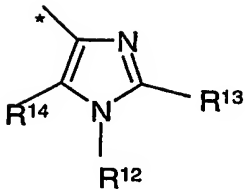
(h)



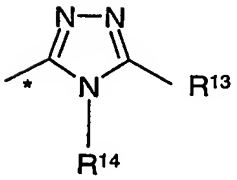
(i)



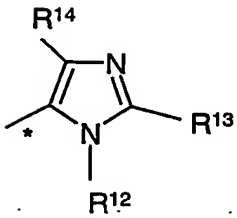
(j)



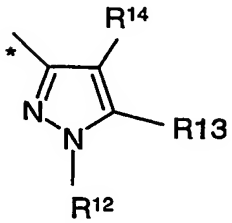
(k)



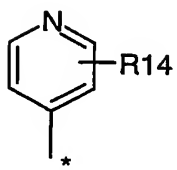
(l)



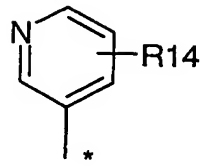
(m)



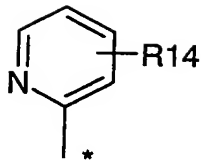
(n)



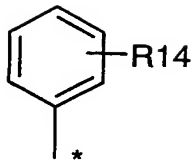
(o)



(p)



(q)



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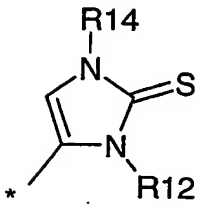
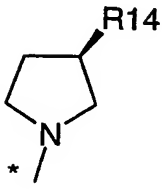
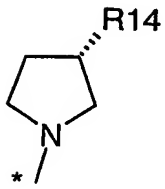


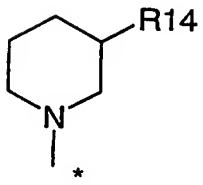
(s)



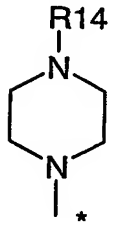
(t)



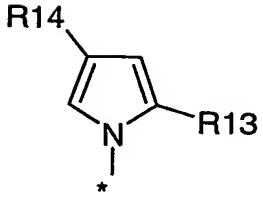
(u)



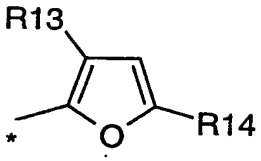
(v)



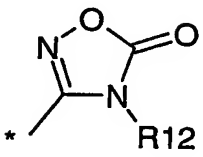
(w)



(x)



(y)



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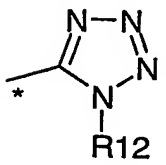

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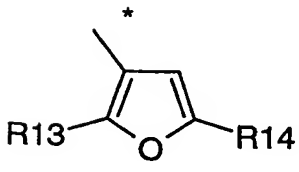


(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)NR^aS(=O)_2R^a$, -$C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^bHet$, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

18. A compound as recited in Claim 14 wherein:

X is S, O, or NR^{21};or XR^{20} is hydrogen,

W is S, O, or NR^{20};

R^{20} is H, -CN, R^a, $-OR^a$, $-NR^aR^a$, -Het, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

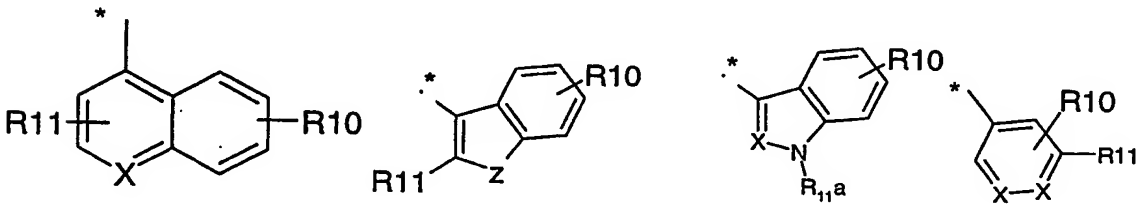
R^{20} is H, -CN, R^a, $-OR^a$, $-NR^aR^a$, -Het, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^1 is CH_3, CH_2CH_3, CH_2CN, CF_3, $(CH_2)_2OH$, cyclopropyl, isopropyl, CH_2CCH, $(CH_2)_2N(CH_2)_2$, $(CH_2)_2N(C=NH)NH_2$, $-CH_2$-2-pyridyl, $-CH_2$-3-pyridyl, $-CH_2$-4-pyridyl, $-(CH_2)_2$-1-imidazolyl, $-(CH_2)_2$-1-pyrazolyl, $-(CH_2)_2$-1-piperidyl, $-(CH_2)_m$-(1-methylpiperidin-4-yl), $-CH_2$-(1-methylpiperidin-3-yl), $-(CH_2)_2$-(morpholin-4-yl),

R^2 is $-CH_2CH_2CH_3$, $-CH_2$-cyclopropyl, $-CH_2CH(CH_3)_2$, $-CH_2CH_2CH_2F$, $-CH_2$-cyclobutyl, $-CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)_2$, $-CH_2CF_3$, $-CH_2$-methylphenyl, $-CH_2$-phenol, $-CH_2$-(3,5-dimethylisoxazol-4-yl), $-CH_2$-S-phenyl, $-CH_2$-phenylcarboxyl, or $-CH_2SCF_3$;

R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:



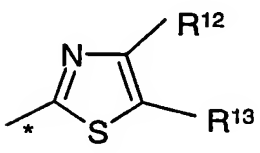
(i) (ii) (iii) (iv)

wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are

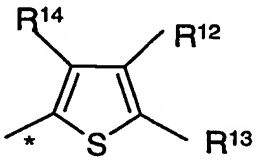
independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:

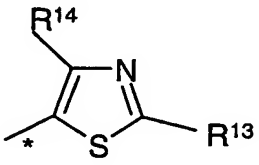
5



(a)



(b)



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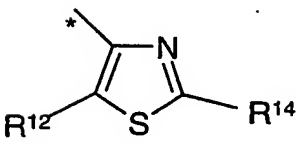
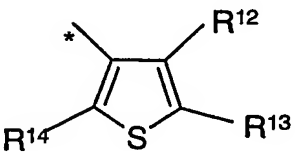
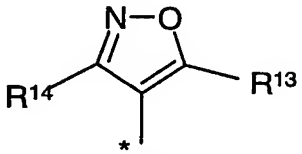


(d)



(e)



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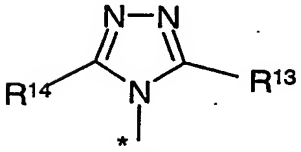

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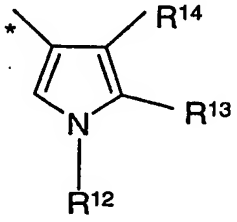

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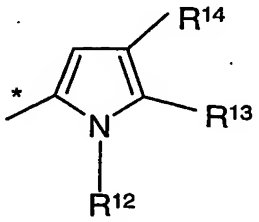
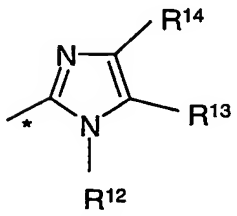
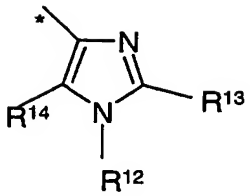


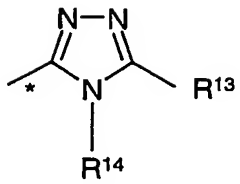
(i)



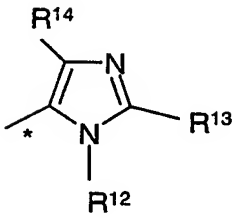
(j)



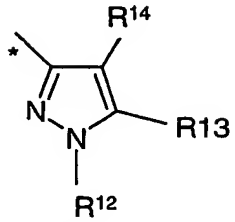
(k)



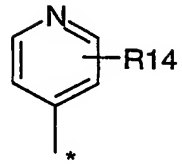
(l)



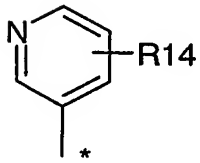
(m)



(n)



(o)



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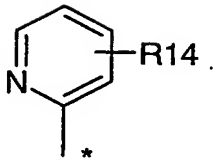

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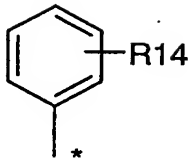
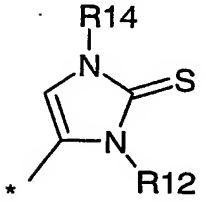
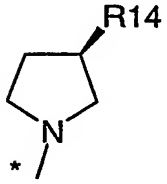


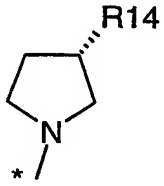
(r)



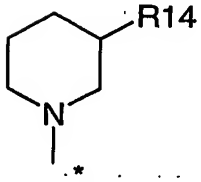
(s)



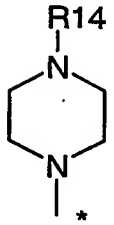
(t)



(u)



(v)



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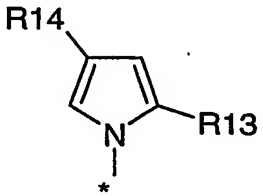
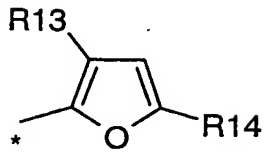
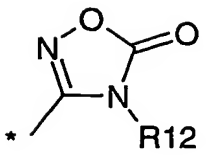


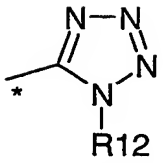
(x)



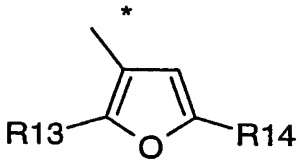
(y)



(z)



(aa)



(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aS(=O)_2R^a$, $-C(=O)NR^a$-Het, $-C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^b$Het, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

19. A compound of formula (III) selected from:

4-amino-7-isobutyl-2-(1-naphthylmethyl)-3-pyridin-4-yl-2,7-dihydro-6H-pyrazolo[3,4-d]pyrimidin-6-one;

7-isobutyl-4-(methylamino)-2-(1-naphthylmethyl)-3-pyridin-4-yl-2,7-dihydro-6H-pyrazolo[3,4-d]pyrimidin-6-one;

4-(dimethylamino)-7-isobutyl-2-(1-naphthylmethyl)-3-pyridin-4-yl-2,7-dihydro-6H-pyrazolo[3,4-d]pyrimidin-6-one;

7-isobutyl-4-(4-methylpiperazin-1-yl)-2-(1-naphthylmethyl)-3-pyridin-4-yl-2,7-dihydro-6H-pyrazolo[3,4-d]pyrimidin-6-one;

4-amino-2-[(6-chloroquinolin-4-yl)methyl]-7-isobutyl-3-(1-methyl-1H-pyrrol-2-yl)-2,7-dihydro-6H-pyrazolo[3,4-d]pyrimidin-6-one;

5-{4-amino-2-[(6-chloroquinolin-4-yl)methyl]-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-isobutyl-4-(methylamino)-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-4-(dimethylamino)-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-isobutyl-6-oxo-4-(propylamino)-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-{2-[(6-chloroquinolin-4-yl)methyl]-4-[(2-hydroxyethyl)amino]-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile

5-[2-[(6-chloroquinolin-4-yl)methyl]-4-(hydroxyamino)-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-4-(cyclopropylamino)-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-{2-[(6-chloroquinolin-4-yl)methyl]-4-hydrazino-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-4-(2,2-dimethylhydrazino)-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

N-[2-[(6-chloroquinolin-4-yl)methyl]-3-(4-cyano-1-methyl-1H-pyrrol-2-yl)-7-isobutyl-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-4-yl]acetamide;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-(methylthio)-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl]-1-methyl-1H-pyrrole-3-carbonitrile;

5-{2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-[(2-hydroxybutyl)amino]-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl}-1-methyl-1H-pyrrole-3-carbonitrile;

5-(2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-{[(2R)-2-hydroxypropyl]amino}-6-oxo-6,7-dihydro-2H-pyrazolo[3,4-d]pyrimidin-3-yl)-1-methyl-1H-pyrrole-3-carbonitrile;

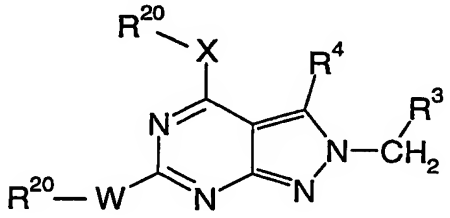
5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-methoxy-6-oxo-6,7-dihydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-oxo-4-(1*H*-pyrrol-1-yl)-6,7-dihydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[(6*Z*)-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-4-(methylamino)-6-(methylimino)-6,7-dihydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

5-[4-amino-2-[(6-chloroquinolin-4-yl)methyl]-7-(cyclopropylmethyl)-6-oxo-6,7-dihydro-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile.

20. A compound having the structural formula (IV):



(IV)

wherein,

X is S, O, NR^{21} ; or XR^{20} is hydrogen;

W is S, O, or NR^{21};

R^3 is a monocyclic or bicyclic, saturated or unsaturated, ring system comprising 0, 1, 2 or 3 heteroatoms independently selected from N, O, or S, the ring being substituted by 0, 1, 2 or 3 substituents selected from =O, halogen, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, nitro, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $N=NR^a$, aminocarbonyl, phenyl, benzyl; or R^3 is represented by -Het, -Het-Het, R^5,-R^5-Het, -Het-R^5, -Het-O-R^5, -R^5-R^5, -R^5-OR^5;

R^4 is a monocyclic or bicyclic, saturated or unsaturated, ring system, or a vicinal-fused derivative thereof, which may contain from 5 to 12, preferably 5 to 10, ring atoms, 0, 1, 2, 3 or 4 of which are heteroatoms independently selected from N, O, or S, the ring system being substituted by 0, 1, 2 or 3 substituents selected from $B(OH)_2$, vicinal $-OCH_2CH_2O-$, vicinal -OC_{1-2}haloalkylO-, vicinal $-OCH_2O-$, vicinal $-CH_2OCH_2O-$, =O, halogen, $-R^bOR^a$, $-SR^a$, $-OR^a$, C_{1-6}alkyl, C_{1-6}haloalkyl, -CN, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, -

$S(CH_2)_mOR^a$, $-NR^aR^a$, $-NHC(=O)R^a$, $-NHC(=O)OR^a$, $N=NR^a$, NO_2, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_nR^a)$, $-C(=O)NR^a(R^bHet)$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, $-S(=O)_2NR^a(R^bC(=O)OR^a)$, aminocarbonyl, phenyl, benzyl; or R^4 is represented by $-(CH_2)_nR^5$-Het, $-(CH_2)_nR^d$, -Het, -Het-Het, R^5, $-R^5$-Het, -Het-R^5, -Het-OR^5, R^5-R^5, or $-R^5$-OR^5; or R^4 is represented by C_{1-6}alky, $-NC_{1-6}$alkyl, or $-N(C_{1-6}alkyl)_2$ wherein the C_{1-6}alkyl, $-NC_{1-6}$alkyl, $-N(C_{1-6}$alkyl) are substituted by 0, 1 or 2 substituents selected from R^a, OR^a, halogen or phenyl wherein R^4 is not $-(CH_2)_zCH_3$, $-(CH_2)_zCH_2OH$, $-(CH_2)_zCO_2H$, or $-(CH_2)_zCO_2C_{1-6}$alkyl wherein z is 1,2,3,4,5, or 6;

R^5 is independently at each instance, phenyl substituted by 0, 1, 2, or 3 groups selected from halogen, C_{1-6}haloalkyl, $-OC_{1-6}$haloalkyl, C_{1-6}alkyl, -CN, nitro, $-OR^a$, $-S(=O)_nR^c$, $-O(CH_2)_mHet$, $-O(CH_2)_mC(=O)Het$, $-O(CH_2)_mC(=O)NR^aR^a$, $-O(CH_2)_mC(=O)OR^a$, $-O(CH_2)_mNR^aR^a$, $-O(CH_2)_mOR^a$, $-S(CH_2)_mHet$, $-S(CH_2)_mC(=O)Het$, $-S(CH_2)_mC(=O)NR^aR^a$, $-S(CH_2)_mC(=O)OR^a$, $-S(CH_2)_mNR^aR^a$, $-S(CH_2)_mOR^a$, $-R^bOR^a$, $-SR^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aOR^a$, $-C(=O)NR^aR^bNR^aR^a$, $-C(=O)NR^aR^bOR^a$, $-C(=O)NR^aR^bS(=O)_nR^a$, $-C(=O)NR^aR^bHet$, $-C(=O)OR^a$, $-OC(=O)R^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-S(=O)_2NR^aR^a$, $-NR^aS(=O)_2R^a$, $-S(=O)_2NR^aR^bC(=O)NR^aR^a$, or $-S(=O)_2NR^aR^bC(=O)OR^a$;

R^{20} is, independently at each instance, H, -CN, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$, optionally substituted alkyl, optionally substituted alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle, wherein such substitution is selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, $NH(C_{1-4}$ alkyl), $N(C_{1-4}$ alkyl)$_2$, C_{1-4} alkanoylamino, $(C_{1-4}$ alkanoyl)$_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl)$_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S(O)$_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic;

R^{21} is, independently at each instance, H, -CN, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$; optionally substituted alkyl, optionally substituted

alkenyl, optionally substituted alkynyl, optionally substituted cycloalkyl, optionally substituted cycloalkenyl, optionally substituted cycloalkynyl, optionally substituted aryl, optionally substituted alkoxy, optionally substituted amino, optionally substituted heterocycle wherein such substitution is selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido, amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, $NH(C_{1-4}$ alkyl), $N(C_{1-4}$ alkyl$)_2$, C_{1-4} alkanoylamino, $(C_{1-4}$ alkanoyl$)_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl$)_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S$(O)_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic;

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^a is, independently at each instance, H, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^b is, independently at each instance, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

R^c is C_{1-6}alkyl, C_{1-4}haloalkyl, phenyl or benzyl;

R^d is phenyl substituted by 0, 1 or 2 groups selected from -CN, halogen, nitro, C_{1-6}alkyl, C_{1-4}haloalkyl, -OH, -OR^c, -NR^aR^a, -$S(=O)_nR^c$, -$C(=O)NR^aR^a$, -$C(=O)OR^a$, -$NR^aC(=O)R^a$, -$OC(=O)R^a$, $B(OH)_2$, vicinyl -OCH_2CH_2O-, vicinyl -OC_{1-2}haloalkylO-, vicinyl -OCH_2O-, vicinyl -CH_2OCH_2O-, phenyl, benzyl and a 5- or 6-membered ring, saturated or unsaturated heterocycle containing 1, 2, 3 or 4 heteroatoms independently selected from N, O, or S;

R^e is independently at each instance, H, C_{1-6}alkyl, -C(=O)C_{1-4}alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1;2,3, or 4 heteroatoms independently selected from N, O or S;

m is 1, 2 or 3;

n is 0, 1 or 2;

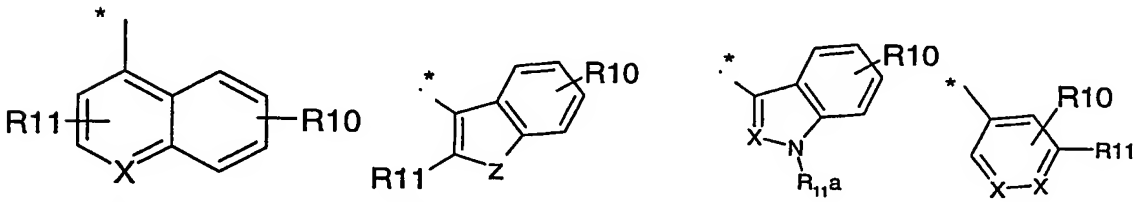
When "optionally substituted" is used, it refers to at least one substituent selected from cyclopropyl, halogen, nitro, cyano, hydroxy, trifluoromethyl, amino, carboxy, carboxamido,

amidino, carbamoyl, mercapto, sulfamoyl, C_{1-4} alkyl, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} alkoxy, C_{1-4} alkanoyl, C_{1-4} alkanoyloxy, NH(C_{1-4} alkyl), N(C_{1-4} alkyl)$_2$, C_{1-4} alkanoylamino, (C_{1-4} alkanoyl)$_2$amino, N-(C_{1-4} alkyl)carbamoyl, N,N-(C_{1-4} alkyl)$_2$carbamoyl, (C_{1-4})S, (C_{1-4} alkyl)S(O), (C_{1-4}alkyl)S(O)$_2$, (C_{1-4}) alkoxycarbonyl, N-(C_{1-4} alkyl)sulfamoyl, N,N-C_{1-4} alkyl)sulfamoyl, C_{1-4} alkylsolfonylamino, and heterocyclic

or a pharmaceutically acceptable salt thereof.

21. A compound as recited in Claim 20 wherein:

R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:

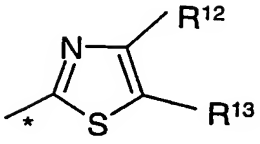


(i) (ii) (iii) (iv)

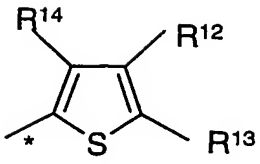
wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

22. A compound as recited in Claim 20 wherein:

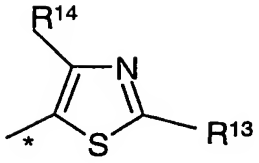
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



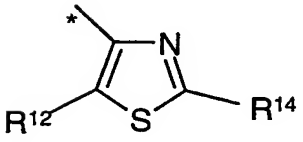
(a)



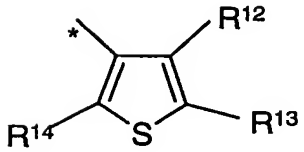
(b)



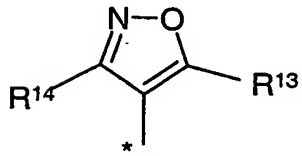
(c)



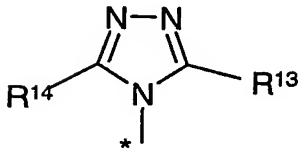
(d)



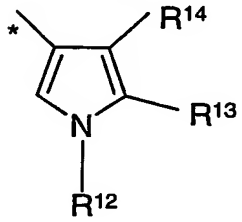
(e)



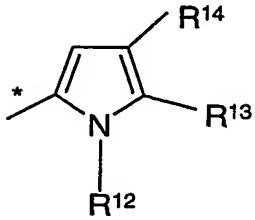
(f)



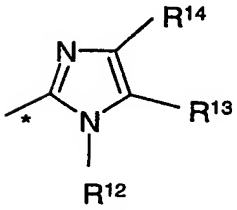
(g)



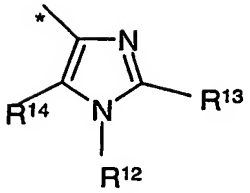
(h)



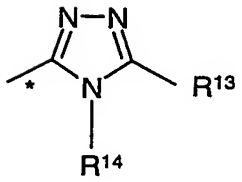
(i)



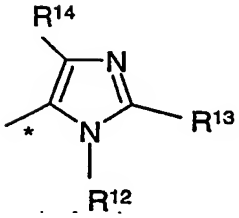
(j)



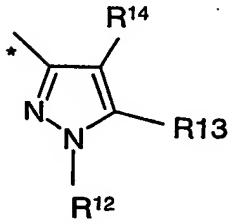
(k)



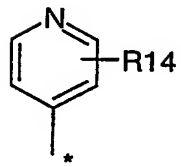
(l)



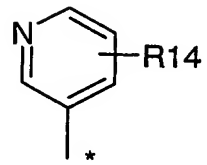
(m)



(n)



(o)



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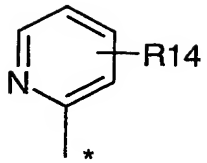
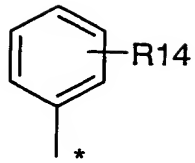
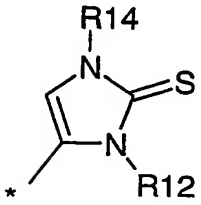


(q)



(r)



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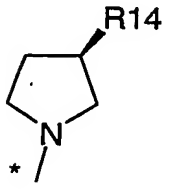
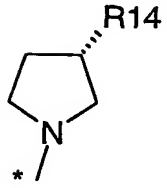
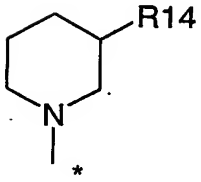


(t)



(u)



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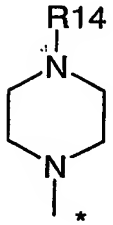
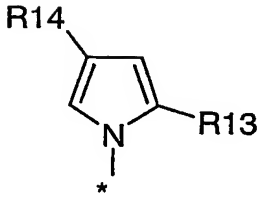
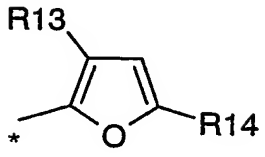


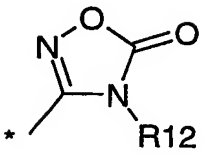
(w)



(x)



(y)



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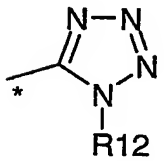

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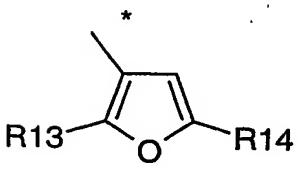


(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, -$C(=O)R^a$, -$C(=O)NR^aR^a$, -$C(=O)NR^aS(=O)_2R^a$, -$C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^bHet$, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

23. A compound as recited in Claim 20 wherein:

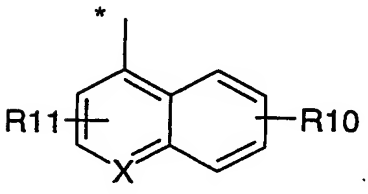
X is S, O, or NR^{21}; or X-R^{20} is hydrogen

W is S, O, or NR^{21};

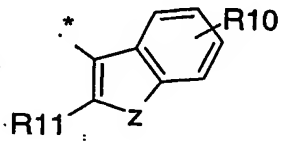
R^1 is CH_3, CH_2CH_3, CH_2CN, CF_3, $(CH_2)_2OH$, cyclopropyl, isopropyl, CH_2CCH, $(CH_2)_2N(CH_2)_2$, $(CH_2)_2N(C=NH)NH_2$, $-CH_2$-2-pyridyl, $-CH_2$-3-pyridyl, $-CH_2$-4-pyridyl, $-(CH_2)_2$-1-imidazolyl, $-(CH_2)_2$-1-pyrazolyl, $-(CH_2)_2$-1-piperidyl, $-(CH_2)_m$-(1-methylpiperidin-4-yl), $-CH_2$-(1-methylpiperidin-3-yl), $-(CH_2)_2$-(morpholin-4-yl),

R^2 is $-CH_2CH_2CH_3$, $-CH_2$-cyclopropyl, $-CH_2CH(CH_3)_2$, $-CH_2CH_2CH_2F$, $-CH_2$-cyclobutyl, $-CH_2C(CH_3)_3$, $-CH_2CH_2CH(CH_3)_2$, $-CH_2CF_3$, $-CH_2$-methylphenyl, $-CH_2$-phenol, $-CH_2$-(3,5-dimethylisoxazol-4-yl), $-CH_2$-S-phenyl, $-CH_2$-phenylcarboxyl, or $-CH_2SCF_3$;

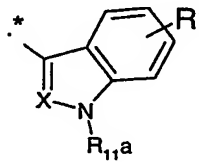
R^3 is selected from formulas (i), (ii), (iii) or (iv) set forth below:



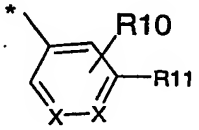
(i)



(ii)



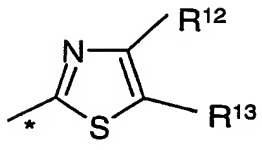
(iii)



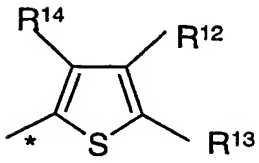
(iv)

wherein * is the location where (i) or (ii) or (iii) or (iv) is attached to structural formula (I), and X is C or N; and Z is O or S, wherein R^{10} is at any position on the ring and R^{10} and R^{11} are independently at each instance H, R^a, halogen, -CN, nitro, OR^a, CF_3, $-NR^aR^a$, $-C(=O)OR^a$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-OC(=O)C_{1-4}$alkyl, $-NR^aC(=O)C_{1-4}$alkyl or $-S(=O)_nR^c$; and wherein R^{11a} is R^a, $-S(=O)_2NR^aR^a$ or $-S(=O)_nR^c$ and n=1 or 2.

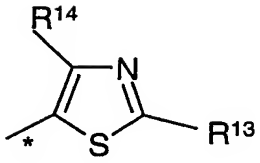
R^4 is selected from formulas (a) to (z) or (aa) or (ab) set forth below:



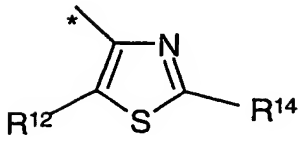
(a)



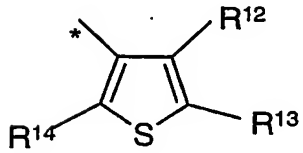
(b)



(c)



(d)



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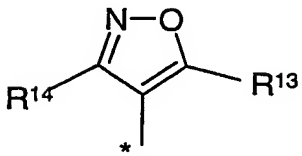

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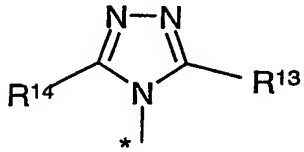
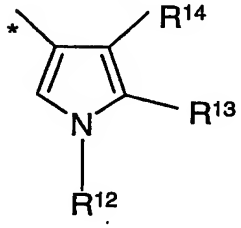
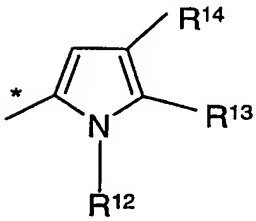


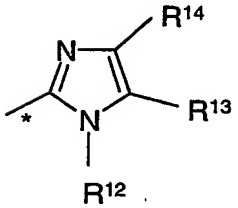
(g)



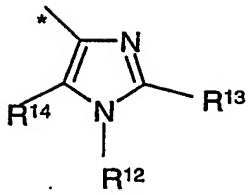
(h)



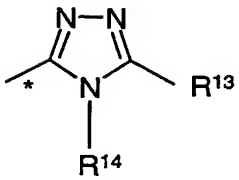
(i)



(j)



(k)



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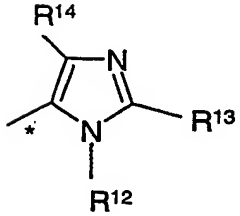
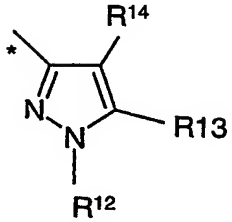
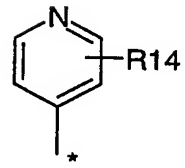


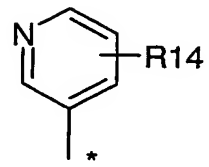
(m)



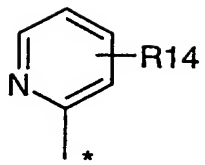
(n)



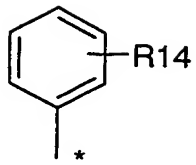
(o)



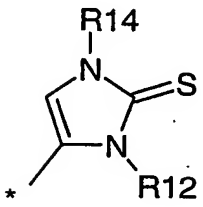
(p)



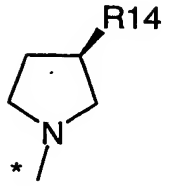
(q)



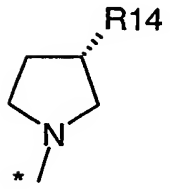
(r)



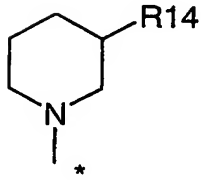
(s)



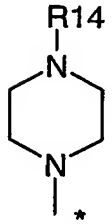
(t)



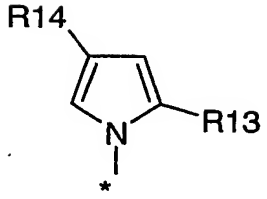
(u)



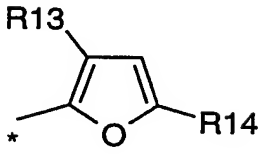
(v)



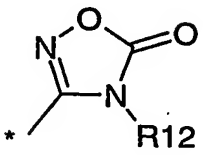
(w)



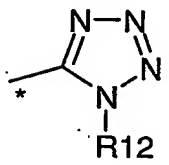
(x)



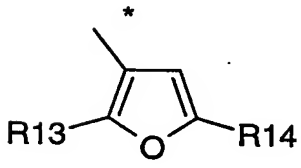
(y)



(z)



(aa)



(ab)

wherein * is the location wherein R^4 is attached to the ring system and wherein wherein R^{12}, R^{13} and R^{14} are each independently represented by H, Het, C_{1-6}alkyl, -CN, -NR^aR^a, -nitro, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)NR^aS(=O)_2R^a$, $-C(=O)NR^a$-Het, -

$C(=O)NR^aNR^aR^a$, $-C(=O)NR^a(R^bNR^aR^a)$, $-C(=O)NR^a(R^bOR^a)$, $-C(=O)NR^a(R^bS(=O)_2R^a)$, $-C(=O)NR^aR^bHet$, $-C(=O)NR^aOR^a$, $-C(=O)R^bNR^aR^a$, $-C(=NOR^a)R^a$, $-C(=NCN)R^a$, $-C(=O)OR^a$, $-C(=O)OR^bNR^aR^a$, $-C(=O)R^a$, $-OC(=O)R^a$, $-C(=O)R^a$-SR^a, =S, $-NR^aC(=O)R^a$, $-NR^aC(=O)OR^a$, $-NR^aS(=O)_2R^b$, $-C(=NOR^a)R^a$, $-S(=O)_2R^a$, $-S(=O)_2NR^aR^a$, $-S(=O)_2NR^a(R^bC(=O)NR^aR^a)$, or $-S(=O)_2NR^a(R^bC(=O)OR^a$.

R^{20} is H, -CN, R^a, $-OR^a$, $-NR^aR^a$, -Het, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

R^{20} is H, -CN, R^a, $-OR^a$, $-NR^aR^a$, -Het, $-S(=O)_nR^c$, $-C(=O)R^a$, $-C(=O)NR^aR^a$, $-C(=O)OR^a$, $-NR^aC(=O)R^a$, or $-OC(=O)R^a$;

R^{20} and R^{21} and the N to which they are attached in combination can also form a 3 to 10 member N-linked saturated or unsaturated heterocycle having either 1, or 2 heteroatoms independently selected from N, O, or S wherein the heterocycle is substituted with R^e;

R^e is independently at each instance, H, C_{1-6}alkyl, $-C(=O)C_{1-4}$alkyl, C_{1-4}haloalkyl, phenyl, benzyl, or 5 or 6-memebered ring, saturated or unsaturated heterocycle containing 1,2,3, or 4 heteroatoms independently selected from N, O or S;

24. A compound of formula (IV) selected from:

5-[2-[(6-chloroquinolin-4-yl)methyl]-6-[(cyclopropylmethyl)amino]-4-(methylamino)-2*H*-pyrazolo[3,4-*d*]pyrimidin-3-yl]-1-methyl-1*H*-pyrrole-3-carbonitrile;

N-{3-(4-acetyl-1-methyl-1*H*-pyrrol-2-yl)-2-[(6-chloroquinolin-4-yl)methyl]-4-methoxy-2*H*-pyrazolo[3,4-*d*]pyrimidin-6-yl}-2-cyclopropylacetamide.

25. A compound according to any one of claims 1 to 24, for use as a medicament.

26. The use of a compound as defined in any one of claims 1 to 24, in the manufacture of a medicament for the treatment or prophylaxis of disorders associated with *H. pylori* infection.

27. A method for the treatment of infections associated with *H. pylori* comprising administering to a host in need of such treatment a therapeutically effective amount of a compound as defined in any one of claims 1 to 24.

28. A method for the prophylaxis treatment of infections associated with *H. pylori* comprising administering to a host in need of such treatment a therapeutically effective amount of a compound as defined in any one of claims 1 to 24.

29. A method for the treatment or prophylaxis of *H. pylori* infection comprising administering a therapeutically effective amount of a compound as defined in any one of claims 1 to 24 or a pharmaceutically acceptable salt as claimed in any one of claims 1 to 24.

30. A pharmaceutical composition comprising a compound as defined in any one of claims 1 to 24, together with at least one pharmaceutically acceptable carrier, diluent or excipent.